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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/750,002	<b>Applicant(s)</b> ROHLAND ET AL.
	<b>Examiner</b> FARHAD ALI	<b>Art Unit</b> 2478

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 08 July 2010.  
 2a) This action is FINAL. 2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-9, 11-21, 23-25 and 27-31 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-9, 11-21, 23-25 and 27-31 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 30 December 2003 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date: \_\_\_\_\_  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

**DETAILED ACTION**

**Status of Claims:**

**Claims 1-9, 11-21, 23-25, and 27-31 are pending in this Office Action.**

**Claims 6-9 and 11-13 are amended.**

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zargham et al. (US 6,954,757 B2) in view of Story et al. (US 6,081,807) and further in view of Greene (US 2002/0165727).

**Claim 1**

Zargham teaches a system comprising:

a database ([Zargham] Column 8 Lines 34-37, "Central repository--refers to a sharable unified capacity such as the operational data store (ODS) with a relational database management system (RDBMS) in the ZLE framework"); and

a plurality of instances of an application server implementing a Java application model ([Zargham] Column 16 Lines 12-16, "The workflow service in the ZLE framework is, for example, an EJB (Enterprise Java Bean, Java 2 enterprise edition ( J2EE)) compliant service running on parallel, available application servers that can store its workflow as XML data structures") coupled in a star topology with the message server at a center of the star topology, the plurality of instances sharing the database ([Zargham] Column 3 Lines 21-26, "the ZLE framework defines a multilevel architecture with a hub, wherein the enterprise applications are loosely coupled to the hub and communicating therewith via adapters" and see Column 6 Lines 53-61, "Loosely coupled applications").

Zarhgham does not disclose a message server having no persistent state such that the message server can be restarted after a failure without performing state recovery operations.

Story et al. teaches a stateless server in Column 1 lines 27-35, "The NFS protocol is defined in various standards documents, e.g., "NFS: Network File System Protocol Specifications," Sun Microsystems, Inc., RFC (Request for Comment) 1094, which is hereby incorporated by reference. The NFS protocol requires a "stateless server." This means that the state of interactions between the server and a client are not to be tracked or managed by the server during a session" in order that "if a client makes a request to a server, and after satisfying that request the server fails and is restarted, the server must be able to handle subsequent related requests from the client without

needing to access state data that was lost when the server failed" (Column 1 lines 35-39).

It would have been obvious to one of ordinary skill in the art at the time to create the invention of Zargham to include the stateless server as taught by Story et al. in order that "if a client makes a request to a server, and after satisfying that request the server fails and is restarted, the server must be able to handle subsequent related requests from the client without needing to access state data that was lost when the server failed" (Column 1 lines 35-39).

The modified Zargham does not specifically disclose one or more of the plurality of instances to initiate registering or reregistering of instance-specific information with the message server upon starting or restarting, respectively, of the message server, the instance-specific information including a confirmation of a connection between the one or more of the plurality of instances and the message server.

In an analogous art, Greene teaches in paragraphs [0129-0135] "In the NW environment, services are remote processing entities that are managed remotely, configured remotely, load their code remotely, and found and communicated with remotely. To facilitate these requirements, the NW service platform includes a container technology for providing a runtime operating environment for services. At the heart of the container scheme is the concept of a generic service container--a CPU process into which arbitrary software services may be homed to a host server at runtime. Each VM runs a small set of code which identifies it as a VM container and makes the VM container able to be found and communicated with remotely. VM containers are realized

as VM heavy-weight processes which are launched from boot scripts as the server is booted. VM service containers are the multi-threaded servers that provide a place in which multiple-service instances reside, each executing its own thread or threads of execution. A VM container is also a service itself. More correctly, a VM container may be thought of as a "service container service running on a VM." The service provided by a VM container is the launching of other services within itself. It behaves much like the services it contains in the way it can be found remotely and communicated with. Thus, like any other service, a VM container must register itself with a domain registrar and/or enterprise repository to be visible in its home domain and with the enterprise repository to be visible to services across the enterprise. The registration and finding of services will be discussed in greater specificity below. The salient point is that, like services, VM containers can be found remotely from anywhere in the world and requests can be programmatically made of them. VM containers report their own statistics and can be asked to shut down. The main difference between a VM container and all other services supported by the NW service platform is in how a VM container, or more properly, the container service, is launched. A VM container is launched from the operating system and not from within another container. It cannot be launched from a remote location programmatically according to the NW conventions. In a similar fashion as other services, containers are not intended to be launched by NW clients. Rather, conceptually it could be considered as an integral part of the operating environment and launched by one of the following means: 1. manually, by telneting into the server and running a script; 2. as part of the startup of the host server's operating system; 3. using

an operating system-specific scheduling mechanism, such as Unix crontab or Windows services; or 4. using Remote Method Invocation (RMI) activation (a Java-specific remote procedural call that requires the RMI Daemon to be running), which itself would have to be started via operating system-specific means" in order that "Once running, a VM container must register itself to be visible to clients, services and administrators in the enterprise that may need the VM container for running a service" (Paragraph [0136]).

It would have been obvious to one of ordinary skill in the art at the time to create the invention of the modified Zargham to include registering of instances as taught by Greene in order that "Once running, a VM container must register itself to be visible to clients, services and administrators in the enterprise that may need the VM container for running a service" (Paragraph [0136]).

### **Claim 2**

The modified Zargham teaches the system of claim 1 wherein each instance comprises:

    a dispatcher node; and a plurality of server nodes ([Zargham] See Figure 9, ZLE framework).

### **Claim 3**

The modified Zargham teaches the system of claim 2 wherein each server node comprises:

a java 2 enterprise edition ( J2EE) engine ([Zargham] Column 16 Lines 12-16, "The workflow service in the ZLE framework is, for example, an EJB (Enterprise Java Bean, Java 2 enterprise edition ( J2EE)) compliant service running on parallel, available application servers that can store its workflow as XML data structures").

#### **Claim 4**

The modified Zargham teaches the system of claim 1 further comprising: a central lock server to provide cluster wide locks to the plurality of instances ([Zargham] Column 7 Lines 43-46, "An event may unlock or prompt the commencement of one or more business transactions. An event may lock or prompt the ending of one or more business transactions").

#### **Claim 5**

The modified Zargham teaches the system of claim 1 wherein the message server comprises:

a first data structure to store a list of connected clients; and a second data structure and a list of services provided in the system ([Zargham] Column 1 Lines 43-46, "the ZLE can integrate data related to the real time operations of the enterprise into a data storage cache, also known as operational data store (ODS)").

### **Claim 6**

Zargham teaches a non-transitory computer readable storage media containing executable computer program instructions which when executed cause a digital processing system to perform a method comprising:

starting a central services node to provide a locking service and a messaging service ([Zargham] Column 7 Lines 43-46, "An event may unlock or prompt the commencement of one or more business transactions. An event may lock or prompt the ending of one or more business transactions" and Column 6 Lines 62-67, "Tightly coupled applications—refers to applications that are not stand-alone and are tightly integrated into the ZLE framework. Tightly integrated functionality—e.g., event capture, data extraction, rules, workflow, message transports and transformations—becomes part of the ZLE core functionality");

starting a plurality of application server instances ([Zargham] Column 16 Lines 12-16, "The workflow service in the ZLE framework is, for example, an EJB (Enterprise Java Bean, Java 2 enterprise edition ( J2EE)) compliant service running on parallel, available application servers that can store its workflow as XML data structures"); and

organizing the application server instances into a cluster having star topology with the central services node at a center of the star topology ([Zargham] Column 3 Lines 21-26, "the ZLE framework defines a multilevel architecture with a hub, wherein the enterprise applications are loosely coupled to the hub and communicating therewith via adapters" and see Column 6 Lines 53-61, "Loosely coupled applications").

Zarhgham does not disclose the messaging service having no persistent state.

Story et al. teaches a stateless server in Column 1 lines 27-35, "The NFS protocol is defined in various standards documents, e.g., "NFS: Network File System Protocol Specifications," Sun Microsystems, Inc., RFC (Request for Comment) 1094, which is hereby incorporated by reference. The NFS protocol requires a "stateless server." This means that the state of interactions between the server and a client are not to be tracked or managed by the server during a session" in order that "if a client makes a request to a server, and after satisfying that request the server fails and is restarted, the server must be able to handle subsequent related requests from the client without needing to access state data that was lost when the server failed" (Column 1 lines 35-39).

It would have been obvious to one of ordinary skill in the art at the time to create the invention of Zargham to include the stateless server as taught by Story et al. in order that "if a client makes a request to a server, and after satisfying that request the server fails and is restarted, the server must be able to handle subsequent related requests from the client without needing to access state data that was lost when the server failed" (Column 1 lines 35-39).

The modified Zargham does not specifically disclose registering or reregistering instance-specific information with the central services node upon starting or restarting, respectively, of the central services node, the registering or registering initiated by one or more of the plurality of application server instances, the instance-specific information including a confirmation of a connection between the one or more of the plurality of instances and the central services node.

In an analogous art, Greene teaches in paragraphs [0129-0135] "In the NW environment, services are remote processing entities that are managed remotely, configured remotely, load their code remotely, and found and communicated with remotely. To facilitate these requirements, the NW service platform includes a container technology for providing a runtime operating environment for services. At the heart of the container scheme is the concept of a generic service container--a CPU process into which arbitrary software services may be homed to a host server at runtime. Each VM runs a small set of code which identifies it as a VM container and makes the VM container able to be found and communicated with remotely. VM containers are realized as VM heavy-weight processes which are launched from boot scripts as the server is booted. VM service containers are the multi-threaded servers that provide a place in which multiple-service instances reside, each executing its own thread or threads of execution. A VM container is also a service itself. More correctly, a VM container may be thought of as a "service container service running on a VM." The service provided by a VM container is the launching of other services within itself. It behaves much like the services it contains in the way it can be found remotely and communicated with. Thus, like any other service, a VM container must register itself with a domain registrar and/or enterprise repository to be visible in its home domain and with the enterprise repository to be visible to services across the enterprise. The registration and finding of services will be discussed in greater specificity below. The salient point is that, like services, VM containers can be found remotely from anywhere in the world and requests can be programmatically made of them. VM containers report their own statistics and can be

asked to shut down. The main difference between a VM container and all other services supported by the NW service platform is in how a VM container, or more properly, the container service, is launched. A VM container is launched from the operating system and not from within another container. It cannot be launched from a remote location programmatically according to the NW conventions. In a similar fashion as other services, containers are not intended to be launched by NW clients. Rather, conceptually it could be considered as an integral part of the operating environment and launched by one of the following means: 1. manually, by telneting into the server and running a script; 2. as part of the startup of the host server's operating system; 3. using an operating system-specific scheduling mechanism, such as Unix crontab or Windows services; or 4. using Remote Method Invocation (RMI) activation (a Java-specific remote procedural call that requires the RMI Daemon to be running), which itself would have to be started via operating system-specific means" in order that "Once running, a VM container must register itself to be visible to clients, services and administrators in the enterprise that may need the VM container for running a service" (Paragraph [0136]).

It would have been obvious to one of ordinary skill in the art at the time to create the invention of the modified Zargham to include registering of instances as taught by Greene in order that "Once running, a VM container must register itself to be visible to clients, services and administrators in the enterprise that may need the VM container for running a service" (Paragraph [0136]).

**Claim 7**

The modified Zargham teaches the non-transitory computer readable storage media of claim 6 containing executable computer program instructions which when executed cause a digital processing system to perform the method further comprising:

sharing a database among the plurality of application server instances ([Zargham] Column 8 Lines 34-37, "Central repository--refers to a sharable unified capacity such as the operational data store (ODS) with a relational database management system (RDBMS) in the ZLE framework").

**Claim 8**

The modified Zargham teaches the non-transitory computer readable storage media of 6 containing executable computer program instructions which when executed cause a digital processing system to perform the method wherein starting a plurality of application server instances comprises:

starting, for each application server instance of the plurality, a dispatcher node and a plurality of server nodes ([Zargham] See Figure 9, ZLE framework).

**Claim 9**

The modified Zargham teaches the non-transitory computer readable storage media of claim 6 containing executable computer program instructions which when executed cause a digital processing system to perform the method further comprising:

starting a message server having no persistent state (See claim 6 rejection).

**Claim 11**

The modified Zargham teaches the non-transitory computer readable storage media of claim 6 containing executable computer program instructions which when executed cause a digital processing system to perform the method further comprising:  
conducting inter instance communication through the messaging server ([Zargham] Column 21 Lines 53-55, "Messaging functions in the ZLE framework may involve a simple messaging scenario of an EAI-type request-response situation").

**Claim 12**

The modified Zargham teaches the non-transitory computer readable storage media of claim 9 containing executable computer program instructions which when executed cause a digital processing system to perform the method further comprising:  
restarting the message server without state recovery responsive to a system failure (see claim 6 rejection).

**Claim 13**

The modified Zargham teaches the non-transitory computer readable storage media of claim 10 containing executable computer program instructions which when executed cause a digital processing system to perform the method further comprising:  
notifying all registered instances from the message server when an additional instance joins the cluster ([Zargham] Column 13 Lines 66-68, "The robust message store

function supports the EAI platform for ZLE hub-based publish and subscribe operations").

**Claim 14**

Zargham teaches a system comprising:

means for organizing a plurality of application servers instances into a cluster having a star topology with a central services node at a center of the star topology ([Zargham] Column 3 Lines 21-26, "the ZLE framework defines a multilevel architecture with a hub, wherein the enterprise applications are loosely coupled to the hub and communicating therewith via adapters" and see Column 6 Lines 53-61, "Loosely coupled applications");

means for sharing a storage resource across the cluster; and means for performing centralized inter instances communication ([Zargham] Column 8 Lines 34-37, "Central repository--refers to a sharable unified capacity such as the operational data store (ODS) with a relational database management system (RDBMS) in the ZLE framework").

Zargham et al. does not disclose means for performing centralized inter instances communication without maintenance of persistent state information

Story et al. teaches a stateless server in Column 1 lines 27-35, "The NFS protocol is defined in various standards documents, e.g., "NFS: Network File System Protocol Specifications," Sun Microsystems, Inc., RFC (Request for Comment) 1094, which is hereby incorporated by reference. The NFS protocol requires a "stateless

server." This means that the state of interactions between the server and a client are not to be tracked or managed by the server during a session" in order that "if a client makes a request to a server, and after satisfying that request the server fails and is restarted, the server must be able to handle subsequent related requests from the client without needing to access state data that was lost when the server failed" (Column 1 lines 35-39).

It would have been obvious to one of ordinary skill in the art at the time to create the invention of Zargham to include the stateless server as taught by Story et al. in order that "if a client makes a request to a server, and after satisfying that request the server fails and is restarted, the server must be able to handle subsequent related requests from the client without needing to access state data that was lost when the server failed" (Column 1 lines 35-39).

The modified Zargham does not specifically disclose the inter instances communication including registering or reregistering instance-specific information with the central services node upon a starting or restarting, respectively, of the central services node, the registering or reregistering initiated by one or more of the plurality of application server instances, the instance-specific information including a confirmation of a connection between the one or more of the plurality of application server instances and the central services node.

In an analogous art, Greene teaches in paragraphs [0129-0135] "In the NW environment, services are remote processing entities that are managed remotely, configured remotely, load their code remotely, and found and communicated with

remotely. To facilitate these requirements, the NW service platform includes a container technology for providing a runtime operating environment for services. At the heart of the container scheme is the concept of a generic service container--a CPU process into which arbitrary software services may be homed to a host server at runtime. Each VM runs a small set of code which identifies it as a VM container and makes the VM container able to be found and communicated with remotely. VM containers are realized as VM heavy-weight processes which are launched from boot scripts as the server is booted. VM service containers are the multi-threaded servers that provide a place in which multiple-service instances reside, each executing its own thread or threads of execution. A VM container is also a service itself. More correctly, a VM container may be thought of as a "service container service running on a VM." The service provided by a VM container is the launching of other services within itself. It behaves much like the services it contains in the way it can be found remotely and communicated with. Thus, like any other service, a VM container must register itself with a domain registrar and/or enterprise repository to be visible in its home domain and with the enterprise repository to be visible to services across the enterprise. The registration and finding of services will be discussed in greater specificity below. The salient point is that, like services, VM containers can be found remotely from anywhere in the world and requests can be programmatically made of them. VM containers report their own statistics and can be asked to shut down. The main difference between a VM container and all other services supported by the NW service platform is in how a VM container, or more properly, the container service, is launched. A VM container is launched from the operating system

and not from within another container. It cannot be launched from a remote location programmatically according to the NW conventions. In a similar fashion as other services, containers are not intended to be launched by NW clients. Rather, conceptually it could be considered as an integral part of the operating environment and launched by one of the following means: 1. manually, by telneting into the server and running a script; 2. as part of the startup of the host server's operating system; 3. using an operating system-specific scheduling mechanism, such as Unix crontab or Windows services; or 4. using Remote Method Invocation (RMI) activation (a Java-specific remote procedural call that requires the RMI Daemon to be running), which itself would have to be started via operating system-specific means" in order that "Once running, a VM container must register itself to be visible to clients, services and administrators in the enterprise that may need the VM container for running a service" (Paragraph [0136]).

It would have been obvious to one of ordinary skill in the art at the time to create the invention of the modified Zargham to include registering of instances as taught by Greene in order that "Once running, a VM container must register itself to be visible to clients, services and administrators in the enterprise that may need the VM container for running a service" (Paragraph [0136]).

### **Claim 15**

The modified Zargham teaches the system of claim 14 further comprising:

means for centralized locking of a resource within the cluster ([Zargham] Column 7 Lines 43-46, "An event may unlock or prompt the commencement of one or more business transactions. An event may lock or prompt the ending of one or more business transactions").

**Claim 16**

The modified Zargham teaches the system of claim 14 wherein the means for performing comprises:

a message server having no persistent state (See claim 14 rejection).

**Claim 17**

The modified Zargham teaches the system of claim 14 wherein the means for performing comprises:

means for recording services provided in the cluster ([Zargham] Column 13 Lines 66-68, "The robust message store function supports the EAI platform for ZLE hub-based publish and subscribe operations").

**Claim 18**

Zargham teaches a method comprising:

starting a central services node to provide a locking service and a messaging service ([Zargham] Column 7 Lines 43-46, "An event may unlock or prompt the commencement of one or more business transactions. An event may lock or prompt the

ending of one or more business transactions" and Column 6 Lines 62-67, "Tightly coupled applications—refers to applications that are not stand-alone and are tightly integrated into the ZLE framework. Tightly integrated functionality—e.g., event capture, data extraction, rules, workflow, message transports and transformations—becomes part of the ZLE core functionality").

starting a plurality of application server instances ([Zargham] Column 16 Lines 12-16, "The workflow service in the ZLE framework is, for example, an EJB (Enterprise Java Bean, Java 2 enterprise edition ( J2EE)) compliant service running on parallel, available application servers that can store its workflow as XML data structures"); and

organizing the application server instances into a cluster having star topology with the central services node at a center of the star topology ([Zargham] Column 3 Lines 21-26, "the ZLE framework defines a multilevel architecture with a hub, wherein the enterprise applications are loosely coupled to the hub and communicating therewith via adapters" and see Column 6 Lines 53-61, "Loosely coupled applications").

Zarhgham does not disclose the messaging service not maintaining a persistent state.

Story et al. teaches a stateless server in Column 1 lines 27-35, "The NFS protocol is defined in various standards documents, e.g., "NFS: Network File System Protocol Specifications," Sun Microsystems, Inc., RFC (Request for Comment) 1094, which is hereby incorporated by reference. The NFS protocol requires a "stateless server." This means that the state of interactions between the server and a client are not to be tracked or managed by the server during a session" in order that "if a client makes

a request to a server, and after satisfying that request the server fails and is restarted, the server must be able to handle subsequent related requests from the client without needing to access state data that was lost when the server failed" (Column 1 lines 35-39).

It would have been obvious to one of ordinary skill in the art at the time to create the invention of Zargham to include the stateless server as taught by Story et al. in order that "if a client makes a request to a server, and after satisfying that request the server fails and is restarted, the server must be able to handle subsequent related requests from the client without needing to access state data that was lost when the server failed" (Column 1 lines 35-39).

The modified Zargham does not specifically disclose registering or reregistering instance-specific information with the central services node upon starting or restarting, respectively, of the central services node, the registering or reregistering initiated by one or more of the plurality of application server instances, the instance-specific information including a confirmation of a connection between one or more of the plurality of application server instances and the central services node.

In an analogous art, Greene teaches in paragraphs [0129-0135] "In the NW environment, services are remote processing entities that are managed remotely, configured remotely, load their code remotely, and found and communicated with remotely. To facilitate these requirements, the NW service platform includes a container technology for providing a runtime operating environment for services. At the heart of the container scheme is the concept of a generic service container--a CPU process into

which arbitrary software services may be homed to a host server at runtime. Each VM runs a small set of code which identifies it as a VM container and makes the VM container able to be found and communicated with remotely. VM containers are realized as VM heavy-weight processes which are launched from boot scripts as the server is booted. VM service containers are the multi-threaded servers that provide a place in which multiple-service instances reside, each executing its own thread or threads of execution. A VM container is also a service itself. More correctly, a VM container may be thought of as a "service container service running on a VM." The service provided by a VM container is the launching of other services within itself. It behaves much like the services it contains in the way it can be found remotely and communicated with. Thus, like any other service, a VM container must register itself with a domain registrar and/or enterprise repository to be visible in its home domain and with the enterprise repository to be visible to services across the enterprise. The registration and finding of services will be discussed in greater specificity below. The salient point is that, like services, VM containers can be found remotely from anywhere in the world and requests can be programmatically made of them. VM containers report their own statistics and can be asked to shut down. The main difference between a VM container and all other services supported by the NW service platform is in how a VM container, or more properly, the container service, is launched. A VM container is launched from the operating system and not from within another container. It cannot be launched from a remote location programmatically according to the NW conventions. In a similar fashion as other services, containers are not intended to be launched by NW clients. Rather,

conceptually it could be considered as an integral part of the operating environment and launched by one of the following means: 1. manually, by telneting into the server and running a script; 2. as part of the startup of the host server's operating system; 3. using an operating system-specific scheduling mechanism, such as Unix crontab or Windows services; or 4. using Remote Method Invocation (RMI) activation (a Java-specific remote procedural call that requires the RMI Daemon to be running), which itself would have to be started via operating system-specific means" in order that "Once running, a VM container must register itself to be visible to clients, services and administrators in the enterprise that may need the VM container for running a service" (Paragraph [0136]).

It would have been obvious to one of ordinary skill in the art at the time to create the invention of the modified Zargham to include registering of instances as taught by Greene in order that "Once running, a VM container must register itself to be visible to clients, services and administrators in the enterprise that may need the VM container for running a service" (Paragraph [0136]).

### **Claim 19**

The modified Zargham teaches the method of claim 18 further comprising:  
sharing a database among the plurality of application server instances  
([Zargham] Column 8 Lines 34-37, "Central repository--refers to a sharable unified capacity such as the operational data store (ODS) with a relational database management system (RDBMS) in the ZLE framework").

**Claim 20**

The modified Zargham teaches the method of claim 18 wherein starting a plurality of application server instances comprises:

starting, for each instance of the plurality, a dispatcher node and a plurality of server nodes ([Zargham] See Figure 9, ZLE framework).

**Claim 21**

The modified Zargham teaches the method of claim 18 wherein starting a central service node comprises:

starting a message server having no persistent state (see claim 18 rejection).

**Claim 23**

The modified Zargham teaches the method of claim 18 further comprising: conducting inter instance communication through the messaging service ([Zargham] Column 21 Lines 53-55, "Messaging functions in the ZLE framework may involve a simple messaging scenario of an EAI-type request-response situation").

**Claim 24**

The modified Zargham teaches the method of claim 21 further comprising: restarting the message server without state recovery responsive to a system failure (See claim 18 rejection).

**Claim 25**

The modified Zargham teaches the method of claim 22 wherein organizing further comprises:

notifying all registered instances from the message server when an additional instance joins the cluster ([Zargham] Column 13 Lines 66-68, "The robust message store function supports the EAI platform for ZLE hub-based publish and subscribe operations").

**Claim 27**

The modified Zargham teaches the system of Claim 1, wherein inter-instance communications are conducted through the messaging server ([Zargham] Column 21 Lines 53-55, "Messaging functions in the ZLE framework may involve a simple messaging scenario of an EAI-type request-response situation").

**Claim 28**

The modified Zargham teaches the system of Claim 26, wherein each registered application server instance is notified by the message server when an additional instance registers with the messaging server ([Zargham] Column 13 Lines 66-68, "The robust message store function supports the EAI platform for ZLE hub-based publish and subscribe operations" and Column 14 lines 8-11 "Performing publish and subscribe

through the relational database enables the messaging function to leverage the parallelism, partitioning, and built-in manageability of the RDBMS platform).

**Claim 29**

The modified Zargham teaches the system of claim 1, wherein each of the plurality of instances is started using a first instance-specific bootstrap logic, the first instance-specific bootstrap logic synchronized with a second instance-specific bootstrap logic stored in the database ([Greene] paragraph [0184], “In the NW environment, when service 910A is launched, it spontaneously “discovers” all nearby registrars 914A1-914AN (i.e., all domain registrars in its local domain). The newly-launched service 910A then registers itself with the all newly-discovered domain registrars 914A1-914AN. In accordance with one exemplary embodiment of the present invention, the NW infrastructure uses multicast packets to allow both services and consumer services (clients) to spontaneously discover any of domain registrars 914A1-914AN within a local domain defined by a multicast radius, thus bootstrapping the process of finding and registering services. Thus, discovery is accomplished without obtaining any specific information about domain registrars 914A, such as a URL address or host name. Similarly, whenever a new domain registrar is deployed, the domain registrar signals its availability for registering services within the local domain by broadcasting a multicast message to all nodes in the multicast domain (this is expected because a registrar is a NW service). All services 910A running in domain A strive to remain registered with all

local domain registrars 914A1-914AN, and so upon receiving the broadcast message, all services in the domain register with the newly-launched registrar").

### **Claim 30**

The modified Zargham teaches the system of claim 1, wherein a node within the plurality of instances is started using a first node-specific bootstrap logic, the first node-specific bootstrap logic synchronized with a second node-specific bootstrap logic stored in the database ([Greene] paragraph [0184], "In the NW environment, when service 910A is launched, it spontaneously "discovers" all nearby registrars 914A1-914AN (i.e., all domain registrars in its local domain). The newly-launched service 910A then registers itself with the all newly-discovered domain registrars 914A1-914AN. In accordance with one exemplary embodiment of the present invention, the NW infrastructure uses multicast packets to allow both services and consumer services (clients) to spontaneously discover any of domain registrars 914A1-914AN within a local domain defined by a multicast radius, thus bootstrapping the process of finding and registering services. Thus, discovery is accomplished without obtaining any specific information about domain registrars 914A, such as a URL address or host name. Similarly, whenever a new domain registrar is deployed, the domain registrar signals its availability for registering services within the local domain by broadcasting a multicast message to all nodes in the multicast domain (this is expected because a registrar is a NW service). All services 910A running in domain A strive to remain registered with all

local domain registrars 914A1-914AN, and so upon receiving the broadcast message, all services in the domain register with the newly-launched registrar").

### **Claim 31**

The modified Zargham teaches the method of claim 18, wherein the instance-specific information further includes information about a new service that the one or more of the plurality of instances provide ([Greene] paragraph [0210], "In the case of service, enterprise lookup service 914A looks up an enterprise repository and then registers the service by listing the service's attributes and the service's registrars' URLs in the enterprise repository. In the case of a global client, enterprise lookup service 914A looks up an enterprise repository and finds a service listed in enterprise repository 926 based on the attributes listed for the service. Enterprise lookup service 914A either returns the service's registrars' URLs to the client and the client accesses the registrar for the service proxy, or alternatively enterprise lookup service 914A accesses one of the service's registrars directly and causes that registrar to pass the service's proxy to the client").

### ***Response to Arguments***

4. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to FARHAD ALI whose telephone number is (571)270-1920. The examiner can normally be reached on Monday thru Friday, 9:00am to 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey C. Pwu can be reached on (571) 272-6798. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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